

VIOLENCE, EMOTIONAL DISTRESS AND INDUCED CHANGES IN RISK ATTITUDES AMONG THE DISPLACED POPULATION IN COLOMBIA[¥]

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ABSTRACT

I analyze how direct exposure to episodes of violence induces changes in risk attitudes. For this purpose, I collected data on risk attitudes, household victimization and mental trauma from a group of internally displaced rural households in Colombia, who were exposed to different levels of violence at different moments in time, and from a group of non-displaced rural households. In doing so, I provide evidence on the direction and temporal character of the change in risk behavior after victimization, as well and on the psychological channels that underlie such change. Results indicate that forced displacement, the degree of victimization, and the prevalence of anxiety disorders bring about higher levels of risk aversion. Victims recover with time, yet it takes several years for the effect to vanish away. The magnitude and durability of this change in behavior can therefore hinder the economic recovery of victims of forced displacement, and have transcending impacts on household welfare and poverty in the long run. In this paper I thus provide evidence of a behavioral channel through which victims of civil conflicts can be driven into poverty.

Keywords: Civil War, Forced Displacement, Colombia, Risk Aversion, Mental Trauma

JEL Classification: C93, D03, D81, O12

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*A propensity to hope and joy is real riches;
one to fear and sorrow real poverty.*
David Hulme, Essay 18: The Sceptic, 1742

1. Introduction

Countries torn by civil violence suffer devastating consequences, including the loss of lives and displacement of thousands of civilians, destruction of physical capital and infrastructure, assets losses, schooling disruption, and institutional decay.¹ The long-term economic consequences of civil conflicts are however unclear. Interestingly, among the few macro-oriented studies, some find no permanent impacts of wars on growth and poverty, and suggest a story of post-war recovery and neo-classical growth convergence in the long run (Davis and Weinstein, 2002; Brakman et al., 2004; Miguel and Roland, 2005), whereas others find transcending negative outcomes presumably due to violence's impact on social structures and institutions (Acemoglu, Hassan and Robinson, 2010). Most micro-level studies, on the other hand, find worrisome welfare consequences of exposure to violence and suggest several channels through which these could persist, including asset losses and distress sales, the disruption of risk sharing mechanisms, and the reliance on costly coping strategies such as distress sales and schooling interruption (Brück, 2004; Justino and Verwimp, 2006; Ibañez and Moya, 2010a).

Perhaps surprisingly, recent research in experimental economics has found an overall positive trend of pro-social behavior, political participation, and risk seeking behavior among victims of civil conflicts in different countries (Bellows and Miguel, 2009; Blattman, 2009, Voors et al., 2012).² However, it is still not well understood why these changes in behavior occur, or what are the psychological or social channels driving them. What's more, in the case of the impact of violence on risk attitudes, the results above are at odds with a wide body of psychological research on the role of mental trauma on behavior that finds that emotional

¹ This paper focuses on episodes of widespread violence and civil conflict. Whenever the terms violence is used, it refers to these episodes and not to more general types of violence, such as common delinquency and theft among others.

² Carter and Castillo (2009), Cassar et al. (2011) and Eckel et al. (2009) also find positive behavioral changes after exposure to natural disasters, such as Hurricane Mitch, the 2004 Asian Tsunami, and Hurricane Katrina, respectively.

disorders that are prevalent among victims of violence, in particular anxiety and fear, induce higher levels of risk aversion (Weinstein, 1989; Raghunathan and Phan, 1992; Lerner and Keltner, 2001).

These seemingly contradictory results presumably arise from the different methods used in each discipline. Psychological research, on the one hand, has been conducted in laboratory settings with student populations that have not necessarily been exposed to direct sources of trauma, and relies on experimentally administering information cues that induce particular emotions and then gathering information on risk attitudes. Hence, this work does not identify how violence shapes behavior, but instead how immediate emotional responses influence risk attitudes. Nevertheless, it suggests that similar results should be observed in clinical settings, for example among victims of violence for whom emotional distress is prevalent. Experimental economics, on the other hand, has often used measures of violence at the village level and individual risk attitudes that were elicited several years after the communities were exposed to violence.³ This approach is debatable for two reasons: First, by using violence at the village level, it does not necessarily capture direct exposure to violence. Instead, it averages exposure to violence over communities without knowing who or how many individuals were directly victimized or witnesses some form of violence. Second, by collecting data on risk attitudes a long period of time after the episodes of violence occurred, it implicitly assumes that if violence has any effect on behavior, this effect should be permanent. However, if the incidence of mental trauma is what underlies the observed shifts in behavior among victims, such change will not only depend on the severity of exposure to violence, but also on the extent of the resulting mental trauma, and will conceivably vanish away as victims recover psychologically.⁴

³ Voors et al (2012) conducted their field experiments in 2009, six years after the peace agreements brought and end to the conflict in Burundi, and use the share of war-related deaths in a community between 1993 and 2003 as their measure of conflict victimization. However, as they mention in the working paper version of their article, most of the violence occurred in the early years of the conflict, close to 1993. Hence, their victimization measure captures community exposure to violent events that occurred a long time before risk attitudes were elicited.

⁴ A recent paper by Callen et al. (2012) combines these two approaches: it randomly administers controlled recollections of fear on subset of their sample, and uses province level data on recent terrorist attacks in Afghanistan. Their results indicate that those individuals who live in provinces with higher levels of violence and who were asked to recollect fearful events during the laboratory experiment exhibit a high

In this paper I analyze how risk attitudes change as a result of a direct and heterogeneous exposure to violence among the Internally Displaced Population (IDP) in Colombia, and provide evidence on the psychological channels that explain this change, and on its temporal character. Colombia provides a different context to study the behavioral consequences of violence than that of previous research, especially since it has suffered an ongoing civil conflict since 1948. Although violence has had a toll on economic growth, violence has not destabilized the path of economic growth followed since the beginning of the 20th century, and nowadays Colombia is considered an emerging-market country. Violence against civilians is nonetheless still occurring and it is not a new or one-time phenomenon, especially in rural areas. Between 1997 and 2011, violence produced the displacement of 3.88 million people, a figure that corresponds to 8 percent of the Colombian population.

The IDP constitutes the biggest and most salient group of victims of the civil conflict in Colombia, and suffers considerable welfare losses due to violence. Displaced households are directly exposed to a combination of violent events, including assassinations, massacres, and threats, and they lose their assets, and experience sharp drops in income and consumption from which they are unable to recover (Ibañez and Moya, 2010 and 2010a). Violence and displacement also take a toll on the mental health of the IDP. The high prevalence of Post Traumatic Stress Disorder (PTSD), depression, and anxiety among the displaced population is worrisome by itself but also suggests that by inducing mental trauma, violence could also bring about a shift towards higher levels of risk aversion. A low tolerance for risk and uncertainty, in turn, has worrisome socio-economic consequences since risk-averse victims will become reluctant to reduce their own consumption in order to make the investments required to move out of poverty. Such behavioral change would then reinforce the already worrying welfare consequences of displacement. Considering the extent of displacement in Colombia, this could also affect poverty and inequality dynamics at the macro-level and leave a legacy of poverty difficult to overcome with traditional policy interventions.

To identify the causal effect of violence on risk attitudes, I conducted a field experiment to measure risk attitudes with tasks over three domains (gains, losses, and

preference for certainty, whereas those exposed to violence without fearful recollections, and those asked to recollect fearful experiences with out exposure to violence had no apparent change in risk behavior.

ambiguity), and administered a household survey and a household victimization questionnaire among a group of 285 displaced rural households and a control group of 319 non-displaced rural households. To control for possible endogenous selection into violence and into displacement, the fieldwork was carried out in two regions where, according to reports from different sources, violence has been indiscriminate against rural villages and households in recent years. Moreover, the sample of displaced households was designed to include only victims of massive displacements. These episodes of displacement occur when violence is widespread among a village and the entire village is forced to migrate. I argue that massive displacements correspond to episodes of random exposure to violence, where the ‘decision’ to migrate is exogenous to household characteristics and attitudes. Unfortunately, violence escalated during the fieldwork in the two regions chosen, and as a result I was unable to reach all of the massively displaced communities sampled. For this reason, I included a sample of displaced households that were not necessarily displaced with their entire village, but who were displaced from the same municipalities where the massively displaced were displaced from. I argue that given the dynamics of violence in the past ten years, selection into violence and into displacement is unlikely among this group, but that in the case that there is some source of unobserved selection, the omitted variable bias will work against the hypothesis that violence induces emotional trauma and thus makes victims more risk averse. I also show that the main results are robust when I restrict the sample of displaced households to those massively displaced, where endogeneity concerns are attenuated.

The control group of rural non-displaced households was drawn from the same two regions where the massive displacements were drawn from; specifically, from rural villages located in neighboring municipalities where the risk of violence and displacement was prevalent, but where massive displacements did not occur. I argue that these households provide an appropriate counterfactual of what risk attitudes looked like in the absence of violence, since they reside in similar and neighboring municipalities, and share similar demographic, cultural and socioeconomic traits as the displaced households before they were displaced. I also argue that the recent conflict dynamics in both regions suggest that it is unlikely that specific villages were targeted, and thus that there is no selection at the village level.

To understand if the impact of violence on risk attitudes is permanent or temporal, the sample of displaced households includes households that were displaced at different points in

time during the past ten years; 46 percent of them were displaced in the previous year, and over ten percent just two weeks before the data was collected. This allows me to have a sample of households for whom the episodes of violence and displacement are still vivid, and to control for the time elapsed since the episodes of violence in the econometric specifications. To identify the channels through which the shift in behavior occurs, and to test if the changes are driven by the incidence of mental distress, I also administered the Symptom Checklist 90 (SCL-90-R), which measures an overall index of mental distress along with nine different dimensions of psychopathologies, including two measures of anxiety disorders.

I first show that being a victim of forced displacement entails higher levels of risk aversion in the gains and ambiguity task, but not on the losses task. The effect of forced displacement on risk attitudes vanishes away with time, although over three years are needed for it to do so. Second, the shift in risk attitudes is explained by the degree of victimization suffered by the household and by the incidence of Phobic Anxiety, an anxiety disorder presumably explained by the exposure to trauma. All of these results are robust and do not change in magnitude in specifications that include a rich set of households controls, such as pre-war characteristics and community leadership positions. Thus, if selection into displacement is on observed household characteristics, the results above are the causal unbiased estimates of the impact of displacement on risk attitudes and not spurious relationships (Imbens, 2003). Third, to address concerns of selection of violence at the village level, I restrict the econometric analysis to the sample of displaced households under the assumption that conditional on being victimized, the degree of victimization is random. In this case, the degree of victimization and the incidence of Phobic Anxiety still explain the shift towards higher levels of risk aversion, further suggesting that the overall results are not driven by endogenous selection into displacement or into violence. Of course, forced displacement entails a variety of experiences in addition to victimization, such as asset losses, poverty, and migration, which could all partially explain the results above. For this purpose, I use the data from the household survey to show that the size of the asset losses and the differences in per-capita expenditures are not driving the observed impact of violence on behavior.

This paper proceeds as follows. The following two sections provide a brief description of violence in Colombia, and on the psychological determinants on risk attitudes and the implications for poverty dynamics, respectively. Section four describes the sample design,

the identification strategy and the data collected. The next two sections presents the main results, and evidence that other factors, such as attrition, asset losses, and poverty levels are not driving these results. The last section concludes.

2. Civil Conflict and Forced Displacement in Colombia

“I had to leave my house after my father was murdered. They [members of an armed group] shot him in the back, a bullet to the neck. I do not know really why. I was there when this happened. I saw it all. He fell down without even screaming, his shirt covered with blood. Immediately after, they told me: ‘Tell you family that this is a warning’. In that moment my wife and I knew we could not live there anymore. We were terrified. We had to leave quickly, without thinking about the future, and trying not to think about the past. [...] We left everything behind – the land, animals, and the few things we had worked to get through time – and we left immediately. [...] We did not have time to think what was happening to us. [...]”

Doctors Without Borders (2006): Testimony of a displaced household living in a slum in Sincelejo, Sucre [Own translation].

Struggles between the two major political parties in the late 1940’s, and the assassination of a presidential candidate in 1948 led to the outbreak of ‘La Violencia’, the precedent of modern civil conflict in Colombia. Homicide rates soared during this period and official figures estimate that 30,000 people lost their lives until 1958, when a power sharing agreement brought an end to armed confrontations between the two parties (Echeverry et al. 2001). Violence did not end then, however, since peasants who had fought along the Liberal Party settled in “independent republics” along isolated regions in the central-south region of the country and refused to abide by the peace agreements of the 1950’s. During the mid sixties, communist guerrilla movements emerged among these groups and launched irregular attacks on government forces and rural towns (Echeverry et al, 2001). By the end of the following decade, landlords and local elites, with the complicity of the military, encouraged the creation of paramilitary groups as a response to the emergence of the guerrillas, but also to target grass roots movements and control lands and resources in an effort to protect the status quo of rural elites and support the emergence of a new class of businessmen connected to the illegal drug trade. During the 80’s and 90’s, violence against the civilian population escalated as the result of the guerrillas and paramilitaries participation in all phases of production and trafficking of illegal drugs (Gaviria, 2000; Thoumi, 2002).

Aggressions towards rural communities and civilians have not been an accidental by-product of the civil conflict, but instead a deliberate strategy of illegal armed groups. Civilians

have been victimized as a strategy to spread fear and uncertainty and thus to obtain control over the population in contested areas, strengthen territorial and economic control, diversify funding sources, and weaken the enemy's support base. Since 1997, when forced displacement was legally recognized and official statistics recorded, violence has caused the forced displacement of 3.8 million people, mostly from rural areas. Most displacement episodes occur at the individual level (where one or a few households migrated) rather than massively (where entire communities were displaced), although the intensity of massive displacement tracks the intensity of individual displacements through time (Figure 1). Although forced displacement has occurred in 95 percent of municipalities, displacement has been more intense in certain regions and the geographical distribution of displacement also has not varied drastically through time (Figure 2).⁵

Understanding the dynamics and underlying logic of violence against civilians and forced displacement is important to assess the extent of endogenous selection into violence and into displacement. In fact, violence against civilians has changed through time from an initial period of selective violence against social leaders towards later periods of indiscriminate violence against civilians. First, in the late 70's the rise of social movements and the appropriation of the social conflict discourse by guerrilla groups brought about selective violence from paramilitaries against social movements to discourage and eradicate any form of collective action. Paramilitary violence was purposely targeted towards community, union leaders, and left wing politicians, and justified under the premise that any form of social organization was supportive of the guerrillas' objectives. Guerrillas, in turn, struck back against politicians, landowners, and peasants who were accused of collaborating with the paramilitaries. Selective violence turned specific segments of the population into objects of persecution, threat, and death, and this brought about an initial period of silent and individual displacement (Reyes, 2009; CNRR, 2011).

By the mid nineties, the civilian population, especially in rural areas, became increasingly victimized as illegal drug production and trade fueled the expansion of guerrillas and paramilitaries, who clashed to establish their supremacy throughout the country. Territorial

⁵ The spatial distribution of displacement for each year between 1997 and 2010 is presented in the online appendix for this paper.

control was obtained through punitive actions against civilians, and rural communities became victims of all groups through the successive or simultaneous presence of guerrillas, paramilitaries, and even the military. The end of violence against civilians was not only to achieve the physical elimination of certain individuals, but also to demonstrate to survivors that violence was real and could happen to all. For this purpose, assassinations, mutilations, sexual violence, and massacres, among others, were often carried out in public and corpses were exposed and abandoned at the sight of all inhabitants. By spreading fear, uncertainty and terror, armed groups gained control of the movements, activities, preferences and living habits of the population, and this became the most effective mechanism to achieve territorial dominance (Duncan, 2006; Reyes, 2009; CNRR, 2010; CNRR, 2011).

Violence, and the risk of victimization, extended during this period to entire communities without distinctions of race, age, gender or political affiliation, and violence was indiscriminate and encompassed all members of communities located in contested regions (Duncan, 2006; CNRR, 2011). Testimonies of demobilized paramilitary and guerrilla members indicate that endless lists of potential targets were made in villages and towns and that violence was often random and followed no clear logic. (Duncan, 2006; Reyes, 2009; CNRR, 2011). The prolonged and systematic exposure of civilians to violence shattered any sense of safety, and all notions that violence was targeted towards specific individuals, groups or communities (CNRR, 2011). Widespread fear and terror, and the exposure to multiple manifestations of violence then led to the displacement of millions of individuals who were either ordered to migrate, or found no other option to survive. Data from the ‘Encuesta Nacional de Hogares Desplazados’ (ENDH-2004), a nationally representative survey of the IDP conducted in 2004, indicates that 87 percent of the displaced households migrated after suffering at least one type of violent event against the household, and on average over three different types of violent events before migrating.⁶ In addition, most displaced households report a combination of direct threats, indiscriminate violence and combats in their vicinity, assassinations, and orders to migrate as the triggers of

⁶ The remaining 13 percent, who do not report any type of violence against the household but instead violence against neighbors, migrated preventively due to fear of the escalation of violence in their communities. The existence of households that migrate without any direct exposure to violence raises concerns of endogenous selection into violence of households who are inherently more disposed to fear and thus who have higher levels of risk aversion. However, as I will argue later on, this would bias the results against the hypothesis that a higher degree of victimization leads to higher levels of risk aversion.

displacement (Table 1, Column 1).⁷ This period of escalating violence against civilians reached its peak in 2002 when nearly half a million individuals were displaced (See Figure 1).

As the Colombian government's launched a peace process with the paramilitaries and intensified of military operations against the guerrillas, conflict dynamics changed and brought about more indiscriminate violence against civilians. First, soon after the demobilization of 30,000 paramilitaries, small neo-paramilitary groups emerged to fill the power void created in regions formerly under paramilitary rule, control the illicit drug trade, and protect lands and resources that were illegitimately obtained during the previous decade. Neo-paramilitary bands, with no defined structure or line of command, clashed among each other and victimized and displaced the communities and individuals who happened to be on the path of the neo-paramilitary expansion (Humans Right Watch, 2010). Criminal bands now operate in all but two departments, and have a strong presence in 360 out of 1,102 municipalities. The Caribbean region, in addition to the department of Antioquia, is perhaps the region most affected by the presence of such groups, which operate in 78 percent of municipalities in the department of Córdoba, and 65 percent of municipalities in the departments of Sucre and Bolivar (Indepaz, 2011).

Second, military operations against the FARC guerrillas increased in several regions since 2002, especially in the central departments of Tolima, Cauca, Meta, and Caquetá, and have also resulted in random civilian victimization and displacement.⁸ The FARC have set land mines as they retreat, abduct or recruit minors, tax and victimize the civilian population to offset declining incomes and grasp control of the population, and have launch indiscriminate attacks on communities and rural towns to ease pressure from the military in neighboring municipalities.⁹

⁷ Respondents were asked about the types of events that led to their displacement (assassinations, threats, combats among others) and not for the number of times they were victimized or exposed to each of these events. The above data thus reports the occurrence of each type of event.

⁸ The sources for these claims are many and do not come from a single article or reference; most come from a variety of articles on the conflict dynamics of these regions that have been published over the last four years in different magazines and newspapers. A personal interview with the Head Ombudsman of the department of Tolima also supports the claims above, and can be obtained (in Spanish) upon request.

⁹ The military also have a share in the victimization of civilians, mainly by labeling communities previously under the influence of the FARC as supporters of guerrillas, harassing their inhabitants for this reason, and engaging in extra-judicial executions of civilians and then portraying them as guerrilla members killed in combats. Extra-judicial executions of civilians are known as 'falsos positivos' and

Forced displacement has important connotations for household welfare, and for poverty and inequality dynamics at the micro and macro level. In the process of displacement, rural households abandon assets and lands, and arrive at urban areas where their agricultural skills are of no use. As a consequence, unemployment rates soar, labor income and aggregate consumption fall considerably, and households are obliged to adopt coping strategies to satisfy minimum consumption needs that jeopardize future welfare. Households are not able to recover their asset base, and income and consumption levels remain low years after the episodes of displacement suggesting that the negative consequences of displacement persist with time (Ibañez and Moya, 2010 & 2010a). Violence and displacement also bring about considerable emotional distress and mental trauma. High levels of PTSD, anxiety, and major depression, especially among those with high degrees of victimization, have been observed across different subgroups of the displaced population in different regions of the country, as well as a higher incidence of fear and anxiety than in the general population. (Encuesta de Salud Mental, 2003; Londoño, et al., 2005; Perez-Olmos et al., 2005; Sinisterra et al., 2007; Doctors Without Borders, 2009 & 2010).

The consequences of emotional distress are disturbing and often go beyond the direct effects on mental health. Fear, depression, anxiety, and PTSD cause emotional exhaustion, and overwhelm the ability to cope, but also influence social functioning and hinder the ability to perform different tasks, even years after the episodes of victimization. (Mollica et al., 1987; Alldin et al., 1996; Gruenjar, 2000; Vinck et al., 2007). Emotional distress also acquires relevant economic connotations since it can induce changes in risk attitudes, which are important determinants of economic choices and welfare trajectories.

3. Mental Trauma, Risk Attitudes, and Chronic Poverty

“That is why I am here [at the Unit of Assistance and Orientation for the IDP], since they told me they could help us. I had to come alone because my husband is sick and my son is scared of going out to the street. I too have fear, but I have to do it. You know, doctor, it’s been a few nights since I do not sleep, I have dreams where I see the heads of my neighbors. I see that they cry, that they supplicate, ask for mercy. I wake up crying. I start thinking about the farm, about my plants in the garden, about my chickens and cattle, and about our dogs that wanted to come with us but we had to scare them away with rocks so that they would not follow us. I had never felt this way. I had never seen my husband so

independents reports indicate that official forces have assassinated 1,741 civilians in this way. (Revista Semana, “Falsos positivos: 23 años de horror” 21/11/11 www.semana.com).

quiet; I had never seen him cry in silence. [...] I do not know what is going to happen with us, only that we have God and that our life will not be the same since we are now displaced”.

Doctors Without Borders (2010): Testimony of a displaced women living in Florencia, Caquetá, who was displaced from her hometown after an armed group arrived to her village and she heard how they killed and carved some of her neighbors, and then obliged her to bury them. [Own translation]

From the viewpoint of economics, it may be surprising that emotional distress can produce a shift in risk behavior. After all, the canonical model of behavior under risk and uncertainty perceives behavior as a purely cognitive process that involves addressing the desirability and likelihood of probable outcomes, and using this information to reach a decision that maximizes the expected utility of those probable outcomes (Lowenstein et al., 2001; DellaVigna, 2009). Choices are then presumably driven by different contexts – probabilities and outcomes – and by intrinsic risk preferences, which are assumed to be exogenously determined, stable, and somewhat uninteresting constructs.¹⁰

Psychological research, nevertheless, has long recognized that risk behavior is the result of a complex interplay between cognitive evaluations and immediate emotional responses to uncertain and risky situations (Lowenstein et al, 2001). Cognitive evaluations and anticipatory emotions often differ, and when they do, the latter prime and drive risk behavior due to evolutionary and physiological factors (LeDoux, 1996; Lowenstein et al, 2001). Emotions, especially those arising from negative personal experiences, operate beyond a purely informational and learning channel and trigger changes in cognition (Weinstein, 1989; Lerner and Keltner, 2001). As a result, the influence of emotions on risk behavior persists beyond the elicited situation and guides cognition and behavior even in scenarios unrelated to the original source of the emotion. Emotions thus predispose individuals to behave in a certain way, and individuals are usually unable to control or change such predispositions (Lerner and Keltner, 2001). The effect of emotions on risk attitudes acquires important connotations for the question at hand since, as several studies show that even among populations that have not been directly exposed to trauma, small cues that induce feelings of anxiety or anger have been sufficient to produce different patterns of behavior.

¹⁰ Differences in risk behavior across different regions, communities, and cultures, are then thought to be driven by long-term evolutionary processes, learning from past experiences, or differences in the wealth space (Henrich et al., 2001; Carpenter and Cardenas, 2008; Netzer, 2008; Doss et al., 2008).

Using variations in emotional states among college students, measured through self-reported psychological questionnaires or by experimentally administering cues for different emotions, a wide body of research in social psychology finds that different psychopathologies have strong and distinct effects on risk attitudes. In particular, anxious and fearful individuals consider ambiguous situations as threatening, exhibit a preference for low-reward and low-risk, and display pessimistic estimates of uncertain outcomes, and higher levels of risk aversion (Eysenck et al., 1992; Raghunathan and Pham, 1992, Eisenberg et al., 1995; Lerner and Keltner, 2001). Hostile individuals, on the other hand, display optimistic estimates and risk seeking behavior (Lerner and Keltner, 2001; Lerner and Tiedens, 2006). Considering the far above normal incidence of anxiety and fear among the IDP, it is thus reasonable to expect that forced displacement also causes a shift towards higher levels of risk aversion, especially for those individuals with higher degrees of victimization and mental distress.

A shock that induces higher levels of risk aversion will have worrisome welfare implications since it will distort economic behavior and choices. A lower tolerance for risk will induce victims to adjust consumption and investment decisions in a pervasive way, making them reluctant to reduce their own consumption and to make the investments required to move out of poverty. In practice, higher levels of risk aversion hinder welfare trajectories, deter investments in physical capital and human capital, reinforce household vulnerability and thwart wage growth (Levhari and Weiss, 1974; Shaw, 1996; Brown and Taylor, 2005; Ligon and Schechter, 2003). From a theoretical perspective, even temporary changes in risk attitudes can have transcending consequences. Although only a permanent change in risk attitudes will throw victims into a lower steady state under the classical assumptions of the Ramsey optimal consumption and investment problem, under a different set of assumptions, even a temporary shift in attitudes can have irreversible and disturbing welfare consequences. For instance, in an economy characterized by non-convexities in the production function, which give rise to asset-based poverty traps, higher levels of risk aversion levels shift out the critical threshold in the asset levels that divides the upwardly mobile from the chronic poor (Barrett et al, 2008). This suggests that victims might fall below the asset based poverty trap if they become more risk averse even with out asset losses. Even if the shock to risk attitudes is temporary, asset dynamics could still be sufficiently strong to permanently drive victims towards the low level

equilibrium before risk attitudes return to their initial levels and the threshold shifts back to its original position (Moya, 2012b).

4. Methodology

Identifying the impact of violence and forced displacement on risk attitudes is a challenging task. Without longitudinal data on victims' risk attitudes, I rely on a control group of a similar population that provides a counterfactual of what preferences would have looked like in the absence of violence. This strategy, however, will only be appropriate if violence and displacement are exogenous to household characteristics, or when selection is driven by observable characteristics (Imbens, 2003). In this section, I describe the sample design, the data and the identification strategy adopted to estimate the causal impact of violence on risk attitudes.

4.1. Sample Selection

To identify the impact of violence on risk attitudes, the sample was constructed in two steps. First, I drew a sample of displaced households from two different regions with different geographic, socio-economic and cultural characteristics and distinct civil conflict dynamics, but also where violence and displacement have been unsystematic in recent years. I then matched the displaced households to a group of non-displaced rural households residing in the same regions, and argue that these households provide appropriate control group.

4.1.1. Sample of Displaced Rural Households

The first region included in the sample the Atlantic region and specifically the departments of Cordoba, Sucre, and Bolivar, one of the centers of paramilitary expansion and territorial control until the peace agreements of 2005, where neo-paramilitary groups rapidly expanded afterwards. As mentioned in section 2, reports from Humans Right Watch and the Ombudsman's Office of Colombia suggest that violence against civilians has been random as these groups clash against each other to cope and control regions vacated after the peace agreements with the paramilitary groups. Rural populations have been victimized for no other reason than that of residing in the geographic corridors used to transport illegal drugs, or in areas sought by agro-industrial and mining projects, especially in the southern municipalities of Córdoba and the Montes de María region in Bolivar and Sucre (Humans Right Watch, 2010; Negrete, 2012). As a result, entire villages have been displaced by violence. In Cordoba, for

instance, neo-paramilitary groups committed at least ten massacres and displaced at least five villages between October and November 2010, just as the fieldwork for this project was starting (El Meridiano, 2010).¹¹

The second region included was the department of Tolima in the central region of Colombia. This department has a long history of guerrilla presence and has been the scenario of recent military operations against the FARC guerrilla, which have caused its retreat and an escalation in indiscriminate violence against civilians. The FARC has engaged in indiscriminate violence against civilians to make a point that any form of collaboration with the military will be viciously punished, has extorted rural households, and has launched attacks against communities to alleviate military pressure in the areas of the department where their commanders are hiding.¹² In a similar fashion to what happens in the Atlantic region, rural communities have been victimized for no other reason than that of residing in the geographical corridors used by the FARC in their retreat.¹³

Although violence is presumed to be indiscriminate in these two regions, I further addressed the possibility of endogenous selection by designing a sample that only included households victimized during episodes of massive displacements. Massive displacements occur when an entire community or village is forced to migrate, and I argue that violence against civilians during these episodes is unsystematic and the individual degree of exposure to violence is random. Information from Accion Social¹⁴ and the conversations with the victims indicate that the massive displacements happened after an initial period of escalation of neo-paramilitary violence, and after a rival group made presence in the villages and triggered wide scale combats within the villages themselves. Often, armed actors took positions among the houses and schools, and households were victimized by crossfire. After combats ceased, survivors migrated

¹¹ Section 1 in the Online Appendix includes a newspaper article describing these ten massacres and the level of violence in the department of Cordoba at the time of the fieldwork.

¹² The municipalities chosen in the sample of the Central region are in fact at the entrance of the Hermosas' Canyon, one of the safe havens of the FARC where Alfonso Cano, the FARC top commander, was killed by Colombian Armed Forces during Operation Odyssey on Nov 4, 2011, a few months after the fieldwork had concluded.

¹³ The transcripts of a personal interview with the Ombudsman of Tolima which supports this claims is available (in Spanish) upon request.

¹⁴ Acción Social, now the Ministry for Social Prosperity is the Presidential Agency for Social Programs, which administers the programs for the IDP and the system of information on forced displacement in Colombia.

collectively to the nearest county head.¹⁵ Data on the triggers of displacement confirms these claims (Table 1, Column 3): on average, massively displaced households suffered over three types of violent events, witnessed a similar amount of violence within their village, and 93 percent of them migrated after combats between different armed actors took place within their village.¹⁶ Since the whole community is forced to migrate in these episodes, the decision is not driven by individual attitudes. Massive displacements therefore provide events where a group of households is exogenously ‘treated’ with a widespread shock of violence that results in the displacement of the entire group.

Massively displaced communities were identified from administrative records provided by Acción Social, which contained the place of origin of each community, the date of the displacement, the number of households, and their current location. Initially, the sample included all of the massively displaced communities that occurred in the previous three years and that were located in county heads deemed safe enough to carry out the fieldwork.¹⁷ The fieldwork started in November 2011 and I was able to visit two municipalities (Montelíbano and Tierralta in the south of Córdoba) and carry out the fieldwork under tense conditions as violence had been escalating in these sites in the previous year.

In these two municipalities, I contacted the local priests and ombudsmen to help me organize a community meeting in the neighborhoods or shelters where the population resides.¹⁸ During the meetings I explained that the purpose of the project was to understand the consequences of forced displacement in Colombia without mentioning that there would be monetary earnings for their participation. I then made a list of the households in the meeting,

¹⁵ To further substantiate these claims, Section 2 of the Online Appendix describes two of the most emblematic and crude episodes of widespread violence and massive displacement (the massacres of El Salado and Bojayá), as well the massive displacement of the Nuevos Aires village in the rural area of Tierralta, which happened in January 17, 2011, and from which I drew a sample of 14 households.

¹⁴ The module on the triggers of displacement did not ask for the number of times each household was affected by each type of event, but instead on the different violent events that lead to the displacement of the household.

¹⁷ This included communities residing in the county heads of the municipalities of Montelíbano, Tierralta, Valencia, Puerto Libertador, San Pablo, San Benito Abad, Colombia, Chaparral, Dolores, Río Blanco and Ataco.

¹⁸ Quite different to the displacements in Africa, in Colombia there are no IDP camps. Instead, victims often take upon small plots of land in the outskirts of the county heads, and set improvised houses made out of cardboard and plastic. Only in a few occasions, often in the case of massive displacements, municipal authorities set up improvised shelters in abandoned public buildings.

and randomly invited one third of them to participate.¹⁹ A total of 132 massively displaced households from 8 different rural communities, participated in the fieldwork in these two sites.²⁰

Unfortunately, due to the escalation of violence in both regions it became unsafe to conduct the fieldwork in the other municipalities that had been sampled. For this reason, the sample of massively displaced households is smaller than planned and I drew a sample of displaced households residing in the nearest departmental capitals of Cordoba, Sucre and Tolima, where the majority of the IDPs in each department migrate to. Displaced households were located at the local Units of Assistance and Orientation for the IDP (UAO).²¹ In each city, for a period of 2 to 3 weeks, I described the project to population that arrived to the UAO to be registered in the information system or to collect the cash transfers that Acción Social hands out to the IDP, and invited them to participate in the project.²² These participants were screened with the assistance of the UAO staff to guarantee that they were in fact displaced households, and that they had migrated from the same municipalities that had been initially sampled, and thus where the dynamics of violence attenuate selection concerns. In these three cities, 153 displaced households who migrated individually or with neighbors but not with their entire

¹⁹ In the massively displaced communities I had a zero rejection rate, except in the case of the two communities that were displaced a few days before. This happened because the IDP is somewhat ignored by local authorities and most expressed that they wanted to participate so that they could be heard and I could tell their stories. In the case of the recent massive displacement, a big proportion of them expressed that they were too afraid to participate in the project, suggesting that those who participated were presumably the relatively less traumatized.

²⁰ Two of these communities, with approximately 75 households each, were displaced as the fieldwork was being conducted and I witnessed the moment when they arrived to the county heads. 30 households from these two communities participated in the fieldwork.

²¹ The UAO's are run by local authorities and by Acción Social in cities with a high influx of displaced population. Displaced households have to declare at the UAO about the events leading to their displacement, and if their stories are corroborated they are legally registered as IDP, a precondition to receive assistance programs and humanitarian aid from Acción Social, which are supposedly handed out 4 times per year, but in practice households receive one transfer on average.

²² There could be concerns that by selecting the sample of non-massively displaced households from those who seek the assistance of the government, the sample is biased towards those who have not recovered socio-economically and are in dire conditions. However, there are no graduation strategies from these transfers, and all displaced households, whether they have recovered socio-economically or not, are entitled to them. What's more, officials at the different UAO's mentioned that better-off households, who learned how the system of aid works, are the ones who often ask for assistance, and that those who do not show up are the highly traumatized ones who are too afraid to leave their homes and provide information about their episodes of displacement, as it is the case of husband of the displaced woman quoted at the beginning of section 3. In such case, the sample would be composed of those better off and less traumatized households, and if anything the bias would work against the hypothesis that violence induces mental distress and risk averse behavior.

community participated in the fieldwork, for an overall sample size of 285 displaced households.

The data on the triggers of displacement suggests that non-massive displacements also occurred after the escalation of violence and as a reaction to several types of violent events. On average, the displacement process was preceded by the occurrence of over three different types of violent events, and most displacements were induced by threats (Table 1, Column 2). As the testimony quoted in Section 2 revealed, threats and warnings often are accompanied with brutal forms of violence, and households also report a combination of orders to migrate, assassinations, recruitments, attacks and massacres. There is therefore initial evidence that the displacement process was not driven by a preventive response of individuals who migrated due to fears of future violent outbreaks, but instead from direct exposure to violence, and ever higher levels of victimization than in the massively displaced sample.

One of the key features of this paper, is that the sample includes direct victims of violence, who were victimized and displaced at different periods of time. The average time elapsed since the last displacement and the moment when the economic experiments were administered is 2.42 years, nearly half of the sample was displaced in the year previous to the economic experiments, and 30 individuals had been displaced just two weeks before. To my knowledge, no other paper had considered the temporal nature of the shifts in behavior, and I am therefore able to assess if individuals with the most recent episodes of displacement have higher levels of mental distress and higher levels of risk aversion, and the effect of violence on behavior vanishes as they recover psychologically.

4.1.2. Sample of Non-Displaced Rural Households

Control communities were drawn from a stratified random sample of rural households surveyed by the Colombian Longitudinal Survey of Universidad de los Andes (ELCA) in the same two regions.²³ This sample was drawn from 8 neighboring municipalities to those where

²³ The Colombian Longitudinal Survey of Universidad de los Andes, ELCA for its Spanish acronym, is the first nationally representative longitudinal survey in the country. The first wave of data was collected between January and October of 2010 on over 6,000 urban and 4,000 rural households. The rural questionnaire was applied in four regions, including the Atlantic and Central regions.

the sample of displaced households was drawn from.²⁴ Figure 2 depicts the geographic location of the municipalities where the displaced population had migrated from (treated municipalities), as well as the location of the municipalities where the non-displaced reside (control municipalities).

I argue that drawing the sample of non-displaced sample from these municipalities provides an appropriate picture of what risk attitudes look like in the absence of direct violence. First, by drawing the sample from neighboring municipalities, I assure that non-displaced households reside in locations with similar geographic, economic and institutional characteristics. Although there is no administrative data at the village level to show that both victimized and non-victimized communities are similar, at the municipal level, the municipalities where the displaced communities were displaced from are remarkably similar to those where the non-displaced reside over a wide set of geographical, socio-economic, and institutional characteristics (Table 2, Panels A, B and C).

Second, displaced households, before they were displaced, were remarkably similar to non-displaced households over a set of observable household and individual characteristics (Table 3). Several differences arise between both groups, however. Displaced households had older and slightly more educated household heads, bigger lands,²⁵ a higher propensity of informal access to lands, and participated in more social organizations.²⁶ Based on evidence from previous research in developing contexts (see Harrison and Rudstrom, 2008 and Cardenas and Carpenter, 2010 for a review of experimental findings), these differences are associated to lower levels of risk aversion, and thus the direction of the possible bias stemming from these differences would go against the hypothesis that the displaced population becomes more risk averse after being exposed to violence.

Finally, the two regions included in the sample have had a long exposure to paramilitary and FARC violence, and control municipalities are in the close vicinity of those treated, the risk

²⁴ Three of these municipalities were located in the department of Tolima, in the Central region, while four were located in the department of Córdoba, and one in the department of Sucre, in the Atlantic region.

²⁵ The difference in the median size of land holdings is smaller (2 ha vs 0.5) than the difference in mean size, but still significant. The differences in land size and land tenure presumably arise from the geographical locations where the sample of displaced population was drawn from, as the municipalities where this group was displaced from have a higher score in the index of land informality (Table 2, Panel 3) especially in the Caribbean region.

²⁶ Based on evidence from studies in developing contexts, the

of violence against non-displaced households is relatively higher than in other non-victimized municipalities in the country. While homicides rates and massacre rates are considerably lower than in treatment municipalities in control municipalities, and this explains why in these there have not been widespread episodes of displacement, FARC guerrillas (in the central region) and neo-paramilitary bands (in the Atlantic region) operate among both treated and control municipalities, suggesting that non-displaced households were still exposed to the presence of illegal armed groups and to the risk of escalation in violence (Table 2, Panel D). Moreover, since the recent dynamics of the civil conflict are driven by the struggle between neo-paramilitary bands to cope territories in the Atlantic region, and by the retreat of the FARC in the Central region, it is unlikely that these groups were targeting specific villages.

In fact, during the fieldwork violence also escalated in these municipalities, especially in the Atlantic region where neo-paramilitaries expanded their regions of influence and sought new pathways to transport illegal drugs. For this reason, it also became dangerous to travel to the rural areas where non-displaced households reside, and the fieldwork with this group was conducted in the nearest municipality heads. To facilitate participation, the fieldwork took place during the market days, when rural households travel from their villages to the local markets. Selected households were contacted by phone on behalf of the ELCA team, invited to participate in a follow-up activity at the municipal head church, and told that they would be paid for the transport costs to and from the municipality heads.

4.2. Data

Displaced households were first asked to answer a household level survey, which was conducted on during weekdays.²⁷ The survey was based on the ELCA questionnaire with standard modules for current (at reception sites) and previous (at expulsion sites) socio-economic conditions to characterize the displaced households before and after the displacement process. An additional module was introduced to characterize the displacement process, including the expulsion and reception sites, the triggers of displacement, the reception of aid at destination sites, and the time elapsed since the displacement of the household.

²⁷ Massively displaced households were invited to answer the surveys at the local church to ensure a private and safe environment for enumerators and participants, while non-massively displaced households answered the survey at the local UAO's behind closed rooms to ensure privacy.

After all of the household surveys were conducted in each municipality, the household head or spouse, was invited to an activity that took place in local parishes. Each activity lasted around 2 hours, and was carried out with a group of 10 – 15 participants, who first privately answered a module on household exposure to violence and the SCL-90 stress questionnaire and then participated in the experiments to elicit risk attitudes.²⁸

The group of non-displaced rural households did not answer the socio-economic survey since they had answered the ELCA questionnaire a few months before. This group was therefore invited to participate in the group activities where they answered the violence and mental distress questionnaires, and participated in the field experiments to elicit risk attitudes.²⁹ This group also answered the ELCA household and community shock module to update changes and shocks at the household and community level that occurred since the application of the survey.

To capture the degree of exposure to violence, each participant answered a household violence module that captured if household had been exposed to different violent events in the previous year and in the previous ten years, if so how many times had each type of event occurred, and similar questions for witnessing violence. Notice that this module collects data on the direct exposure to violence at the household level, and not at the individual level. Table 4 depicts the data on the incidence (whether it occurred or not) of household victimization and witnessing for both displaced and non-displaced households. As expected, the majority of displaced households have been affected by a wide variety of violent acts, and only 24 out of 353 displaced households (7%) report no direct victimization in the previous ten years, whereas 268 out of 318 non-displaced (75%) households do not report any direct exposure to violence. Similarly, 86% displaced of households indicate that they witnessed how neighbors or friends where victimized, while only 11% of non-displaced households report so.

To measure the incidence of emotional distress and psychopathologies, each participant then answered the Symptom Checklist 90 (SCL-90-R), which consists of 90 questions on a

²⁸ The experiments were carried after all household surveys were completed for two reasons. First, so that those participants who completed the experiment would not be able to share information on the structure of the experiments with future participants. Second, since the experiments included real payoffs and the municipalities where the fieldwork took place are under the influence of different armed actors and were not safe, this allowed me to leave each municipality after handing out the cash prizes.

²⁹ In each municipality, the activities took place during one day to avoid information flows between participants.

broad range of daily symptoms of stress, and identifies a Global Severity Index (GSI) along with nine different psychopathologies.³⁰ The SCL-90-R was chosen over a more common PTSD questionnaire for several reasons: First, a measure of PTSD is only valid when the population has been exposed to a source of trauma. Since few households among the non-displaced household group had been exposed to violence or other shocks, it was not proper to gather information from them on post-trauma symptoms. The SCL-90 instead captures emotional distress that could be driven by exposure to traumatic events but also to other stressful situations, and it was thus appropriate for the case of the victimized displaced and non-displaced samples. This, in turn, allows me to show that the distributions of the incidence of stress for the non-displaced group resemble those of the general population – that is, population not affected by major traumatic events – whereas the incidence of stress for displaced population is out of the ordinary.

Table 5 provides a picture of the average incidence of psychopathologies across both groups, and an indicator for the percentage of population under risk of severe mental distress in each group, and the northwest panel of Figure 3 depicts the distribution of the GSI.³¹ On average, the prevalence of emotional distress among the displaced sample is significantly higher than among the non-displaced sample: 22 percent of the displaced households are at risk of suffering severe stress, and over 47 percent of them were suffering emotional distress at the time of the experiments. For the non-displaced households, these figures were only of 1 and 7 percent respectively. While the distribution of the GSI households has a low variance for non-displaced, for the treated group, the distribution has a higher variance and it is skewed upwards. This suggests that forced displacement was in fact driven by an overwhelming exposure to a traumatic event, which induced abnormally high levels of emotional distress, and not by an endogenous self-selection process.

³⁰ Anxiety, phobic anxiety, depression, hostility, sensitivity, somatization, obsessive-compulsive, paranoid ideation, and psychotic ideations.

³¹ Each score is calculated adding up the scores on the questions relevant for each psychopathology, which range from 0 to 4 indicating no symptoms in the last three months (0), to daily symptoms in the last three months (4), and dividing by the total number of questions for each pathology that were answered. This score is then converted into a T-score (Mean =50; Standard Deviation = 10). A score above 63 for a particular psychopathology indicates that the person is at risk of suffering the particular psychopathology. (Casullo, 2004).

Just as important, I can use the information of the SCL-90 on the incidence of anxiety, phobic anxiety and hostility disorders to test if higher levels of anxiety produce higher levels of risk aversion, whereas higher levels of anger produce the opposite results, as it has been shown by the psychological literature (Lerner and Keltner, 2001).³² Since the difference in the incidence of anxiety and phobic anxiety between the displaced and non-displaced samples is more pronounced than the difference in the occurrence of hostility, I hypothesize that on average displaced households will be more risk averse on than the non-displaced households (Table 5 and Figure 3).

To elicit risk attitudes, I followed Binswanger's (1982) classical 'Choose Lottery' experimental design, with three tasks. In each task, participants were presented a set of six lotteries that involved two outcomes per lottery. The 'safest' lottery provided the lowest expected payoffs with certainty, while expected payoffs gradually increased with the cost of a higher variance and thus higher risk for the other lotteries (See Table 6 for a detailed description of the payoffs in each of the six lotteries for the three different tasks). Each participant's choice therefore indicates its willingness to bear risks; more risk averse individuals will pick safer lotteries, the ones with lower expected payoffs and less risk, while more risk loving individuals will choose lotteries with higher expected payoffs and higher risk.³³ I introduced three variations in the experimental design to identify general risk attitudes over the gains, losses, and ambiguity domains.

³² Anxiety is a psychological state of distress, fear, and concern, and indicates general symptoms of nervousness, tension, fear and panic attacks (Casullo, 2004). In moderate levels, it is considered a normal reaction to a stressor, but a disorder when exceeds certain levels. Anxiety can be caused by many sources of stress, including violence, poverty, and inequality, among others. Therefore, the incidence of anxiety among the displaced population does not indicate that it is the result of exposure to violence but instead to a broad range of difficult situations brought about by displacement. Phobic anxiety is defined as an abnormal fear and behavior of avoidance of regular object or situation. This disorder is characterized by intense fear that is triggered by a stimulus, that is not threatening by itself, but that can bring about recalls of traumatic episodes (Casullo, 2004). During the fieldwork I often heard participants claiming that they were unable to go out to public spaces, to places where a large crowd of people gathered, or to be in the dark, among others, since then they would immediately recall past episodes of victimization and this would make them afraid and anxious. Hostility refers to thoughts, feelings, and actions that characterize the negative anger affect (Casullo, 2004).

³³ There are other experimental designs to measure risk aversion, such as the Holt and Laury (2002) or the Tanaka et al. (2010) procedures, which vary probabilities instead of payoffs, that have been used more frequently in recent research. Their appeal lies in the possibility of estimating Prospect Theory parameters (Kahneman and Tversky, 1976), and in a greater variety of lottery choices (see Carpenter and Cardenas, 2009 for a review of these methods). The 'Choose Lottery' design of Binswanger, however, is more straightforward and easier to understand, particularly in a sample of rural individuals with low levels of educational attainment, and was chosen for this reason.

In the experimental sessions, which were all conducted by myself, participants received a booklet that contained six different rounds, two for each domain or task. To facilitate understanding, each task was depicted in a graphical way, consisting of six circles that represented the six different lotteries to choose from (See Figure 3 for an example of the graphical display of the lotteries in the gains task). In each round, participants were asked to pick one lottery, and were told that at the end of the activity one of the rounds would be randomly picked, and payoffs would be realized. Payoffs ranged from approximately US\$ 6.5 to US\$ 17, corresponding to around 2 to 5 days of off-farm wages in rural areas. Each task first included a practice round, where choices and outcomes were explained, each participant was asked to pick one lottery, and the experiment was played so that participants would privately know what their payoff would have been if the lottery had been a real one. Participants were then asked to pick a lottery in the real round that followed each practice round, and were told that at the end of the experimental session, one task would be randomly chosen, and then a colored ball would be blindly drawn from a bag to indicate the payoff for each participant.

In the gains task, each lottery was divided into a red and a blue semi-circle of equal area, which had a label and pictures of the local currency indicating the two possible payoffs. Participants were instructed to pick one lottery, bearing in mind that if that task were to be chosen, five red balls and five blue balls would be introduced into a black bag at the end of the activity, and one ball would be randomly picked. Accordingly, if a red ball were chosen, participants would receive the payoff indicated in the red semicircle of the lottery they chose, or the payoff indicated in the blue semicircle if the ball chosen was blue. Hence, payoffs in each choice in the gains task had equal probability of occurrence.

The loss task was introduced to address the extent of loss aversion (Kahneman and Tversky, 1976).³⁴ Before making the choice in the losses domain, participants were told that they would earn an upfront payment of \$20,000 if this was the task selected at the end of the activity, and that such payment would be theirs to keep. They were also told that this task allowed the possibility of them losing money, and that if they incurred in losses they were expected to use the upfront payment to cover their losses. As before, payoffs in each choice in had equal

³⁴ Note that in this experimental design the actual loss aversion parameter is not identified separately of the risk aversion parameter. However, by introducing losses in this task, it is possible to obtain a general risk aversion behavior when losses are possible.

probability of occurrence. After taking into account the upfront payment, the expected payoffs in this domain are exactly the same as those in the gains domain (See Table 4). However, by framing the choices in terms of losses instead of gains, it is expected that risk behavior changes, and participants depict a more risk loving behavior in this domain consistent with an aversion to losses.

The last task addressed the extent of ambiguity aversion (Table 4). This domain resembles the gains domain, with the exception that if this task were chosen neither the participants nor the experimenter would know the exact number of red and blue balls in the bag. In particular, a total of 10 balls would be introduced into the black bag, consisting of 3 red and 3 blue balls, as well as 4 other balls that would be randomly and blindly chosen from a bag containing 50 blue and red balls each. The remaining four balls could be all red, all blue, or a combination of blue and red balls. This meant that at the time of the decision the first-order probability distribution of the payoffs was unknown to both the participants and to myself, but there was knowledge on the second-order probability distribution. By introducing this source of ambiguity, it is expected that participants depict a more risk averse behavior in this task, consistent with aversion to ambiguous situations (Kahneman and Tversky, 1976).

Figure 5 illustrates the choices made by the displaced and non-displaced samples in each task during the economic experiments, where lottery 1 corresponds to the safest lottery, and lottery 6 to the riskiest. The whisker-box plots depict the median choice (the white line within the box), the 75th and 25th percentiles (upper and lower bounds of the box), as well as the upper and lower choices. First, it can be noted that the economic experiments work as expected with risk aversion in the gains domain, risk loving behavior in the loss domain, and risk aversion in the ambiguity domain for both groups. In addition, median choice in the gains and ambiguity task is lower in the non-displaced group, and the distribution of risk attitudes in the displaced group appears to be stretched down towards the safer lottery choices in all of the domains.

4.3. Identification Strategy

The differences in behavior between both groups suggest that the displaced population is more risk averse than the non-displaced. To identify the causal impact of violence on behavior, I conduct the analysis in four different ways.

First, I estimate if being a victim of forced displacement produces higher levels of risk aversion by comparing the behavior of both groups in each task through Ordered Probit and Maximum Likelihood methods. The underlying assumption for this estimation is that there is no selection into violence and into displacement and that the non-displaced households provide an appropriate control of what attitudes would have looked like in the absence of violence. I argue that this assumption is realistic the following reasons: First, the dynamics of civil violence suggest that violence has been indiscriminate in the two regions chosen. Second, the sample of massively displaced households consists of victims who migrated with their entire village, and in 93 percent of the cases after combats took place within their villages. Massive displacements thus provide episodes of victimization and displacement exogenous to individual and household characteristics. Third, the sample of individual displacements consists of victims who migrated after exposure to over 3 types of violent events, and from the same regions where violence is argued to be indiscriminate, thus lessening concerns of selection into displacement and into violence respectively. Fourth, I conduct the analysis as before including only those households victimized by massive displacement and their corresponding Atlantic-based controls, to rule out that possible endogenous selection into violence and into displacement of the individual sample is leading to spurious correlations in the specifications above. In all of the econometric specifications I control for the time since the episodes of displacement occurred to observe the temporal nature of the shift in risk attitudes, and for a rich set pre-war socioeconomic household characteristics to address the possibility of selection on observables.

Of course, forced displacement entails a wide variety of experiences, in addition to violence, that could be driving the results above. To explore the mechanisms that drive the higher levels of risk aversion among the displaced population, I separately use the variation on the household degree in victimization and the incidence of Anxiety, Phobic Anxiety, and Hostility across the displaced and non-displaced samples, under the assumption that there is no selection into violence and into displacement. Nevertheless, were there selection into displacement from more fearful households who migrate preventively, lower levels of household victimization among the displaced sample would be associated with higher levels of risk aversion. Thus, the omitted variable bias would work against the hypothesis that a higher degree of victimization makes individuals more risk averse, and the resulting estimates would be

conservative estimates (biased downwards towards zero) of the true impact of violence on behavior.

Third, to consider the possibility that selection occurs at the municipal level, or that the control group is inappropriate because violence and mental distress capture striking differences in the living conditions between the displaced and non-displaced, I again use the variation in the degree of household victimization and on the incidence of anxiety and anger disorders but I now restrict the analysis to the sample of displaced households. In this case, the underlying assumption is that conditional on being victimized, the degree of victimization is random. Nevertheless, if the degree of victimization is endogenous to risk attitudes within the displaced population because fearful and inherently risk averse households migrate at the first sign of danger and are thus less exposed to violence, while risk loving households remain at their places of origin and are thus more exposed to violence, the selection process would bias the estimates downwards and against the hypothesis that a higher degree of victimization induces higher levels of risk aversion. The resulting estimates would thus be conservative estimates of the true impact of violence on behavior among the displaced population.

Finally, I use data on the size of the asset losses suffered by the displaced households, and variations in expenditure levels, that capture income differences, to rule out that the observed effects of displacement, violence, and mental distress on behavior are driven by the asset losses or the levels of poverty caused by forced displacement.

5. Results

5.1. Forced Displacement and Risk Aversion

I first estimate the effect of forced displacement on risk aversion through Ordered Probit estimations that do not assume a specific form for the utility function but instead order lottery choices from the safest (choosing lottery 1) to the riskiest (choosing lottery 6). A positive (negative) coefficient for a particular variable indicates that an increase in that variable has a negative (positive) effect on the probability of choosing the safest lottery (Cameron and Trivedi, 2010). A positive coefficient is therefore associated with a shift towards risky choices, and a negative coefficient with a shift towards safe (risk averse) choices. In addition, marginal probabilities can be estimated to identify the impact of a change in a particular variable on the

probability of choosing each of the six lotteries. Table 7a presents the results from separate estimations for each task.

I regress an indicator variable for whether a household was displaced by violence or not, on the choices in the gains task without controlling for the time of displacement or any other variable of interest (Table 7, Column 1). The negative and significant coefficient of the displacement status indicates being a victim of forced displacement produces a higher probability of choosing the safest lottery, and thus a higher level of risk aversion. Note that by not controlling for the time that has elapsed since the episode of displacement, this effect is an average of the impact of displacement for households that were displaced at different points in time, some of whom could have recovered. Remarkably, after controlling for the time that has elapsed since the time of displacement and its quadratic term (Column 2), the impact of displacement is now almost twice as big as in the previous specification, and still significant at the 1 percent level. With time, as can be noted from the coefficients on the length of displacement, the effect of displacement on risk aversion vanishes, although it takes over three years for it to do so. This result is robust and does not change in magnitude when a rich set of pre-displacement characteristics are included, along with the incidence of other shocks in the previous year and the hypothetical earnings in the previous practice round, indicating that the results are the causal impact of displacement even if violence and displacement are driven by observable characteristics (Column 3).³⁵

To gauge the magnitude of the impact of violence on behavior, I also ran a maximum likelihood procedure developed by Harrison and Rudstrom (2008). The MLE assumes a standard constant relative risk aversion (CRRA) utility function and constructs a latent index that captures the difference in the expected utility from each lottery. This index is then linked to the observed choices through a multinomial logistic distribution. This appeal of this framework is that it allows estimating the risk aversion parameter, and the contribution of the different covariates. The results for this set of MLE, which are included in the Online Appendix for space purposes, indicate that the average CRRA for the overall sample (obtained from an MLE estimation on a constant) is of 0.68, and forced displacement entails an increase of 0.064 in the

³⁵ All of the results are robust when instead of controlling for the hypothetical gains in the practice round, I control for the color of the ball drawn in the practice round.

CRRA, although not significant, when no covariates or time controls are included. However, when I include the terms for the time since the displacement episodes and the same set of covariates as in Table 7, Column 3, displacement is associated with a significant 15 percent increase in the CRRA coefficient (from 0.64 to 0.75).

Columns 3, 4 and 5 of Table 7 present the results from the ordered probit estimations for the loss domain. While forced displacement does not have a statistically significant impact on risk attitudes in the loss task, after adding controls for the time since the episodes of displacement and the same set of covariates as in the regressions above, the coefficient increases considerably. This suggests that the displaced population seems reluctant to take risks to protect their gains and avoid losses, as displacement is associated with a slight downwards shift in the distribution of choices towards a more risk averse behavior (See Figure 5). The same results are obtained through the MLE. Nevertheless, it is not surprising that there is no significant impact on the attitudes towards risk in the loss domain. If the impact of displacement on risk attitudes is driven by the incidence of anxiety disorders, as I will show that it is the case, the results above agree with work in neuroeconomics research, which has also that the psychological trait of neuroticism, which reveals a predisposition to feel anxiety is correlated with risk attitudes in the gains domain, but not in the loss domain (Rustichini, 2010).

Consider now the effect of forced displacement on risk behavior in the ambiguity domain (Table 7, Columns 7, 8 and 9). As in the gains domain, forced displacement induces a sizeable and significant shift towards choosing the safest lotteries. Again, the coefficients on the time of displacement suggest that those households who were displaced more recently and who presumably are more traumatized, are in fact displaying a pronounced effect on behavior due to displacement. The results are robust and do not change significantly in magnitude when I include the set of controls used before. Moreover, the size of this shift, as judged by the MLE is even higher than in the case of the gains task, as displacement induces a 19% increase in the CRRA coefficient.

To address the possibility that the non-massively displaced were driven by some sort of endogenous selection, I restrict the analysis to the sample of massively displaced population and the control households surveyed in the Atlantic region, under the premise that in massively displacements the degree of exposure to violence is even more random and the decision to

migrate is not made at the individual level. Table 8 presents the results from these estimations. The results are robust and even stronger in the gains task, where massive displacement is associated with a higher probability of selecting the safest lottery during the field experiments (Column 1). However, in the losses and ambiguity tasks (Columns 2 and 3), massive displacements are associated with negative but smaller and not significant impact on risk attitudes. Later on, I will show that the result on the ambiguity task can be explained by the fact that ambiguity aversion is driven by the degree of victimization. Since most massively displaced households report a similar story of exposure to violence (combats within their village) this could explain why massive displacement are not inducing higher levels of ambiguity averse relative to the non-displaced population.

5.2. Intensity of Victimization, Mental Distress and Risk Aversion

To explore the channels that drive the impact of forced displacement on risk attitudes, I use the variation in the degree of victimization experienced by each household, and the incidence of Anxiety and Hostility disorders.

Columns 1 to 3 in Table 9 shows the effect of violence on risk behavior in the three different tasks considered. Violence is measured in three different ways: a dummy variable that indicates if the household has been victimized in the previous ten years, the total number of violent events suffered by the household, and a victimization score that was constructed through principal factor analysis. Each panel in the table reports the coefficient of the particular victimization variable as well as on the time control from an ordered probit regression, controlling for the same pre-displacement household and individual characteristics used before.³⁶

Panel of Table 9a indicates that being a victim of violence results induces a higher and significant probability of choosing the safest lotteries, and thus in a shift towards more risk averse behavior, independent of the way in which victimization is measured.³⁷ The average marginal effects (included in the Online Appendix) indicate that the probability of choosing the safest lottery is 6% higher for those who have been victims of violence. This effect is

³⁶ I do not include the coefficients for these controls, but the full results are included in the Online Appendix.

³⁷ The coefficient of the Victimization score is significant at the 15% level.

approximately half the size than the one found for victims of displacement, and thus suggests that violence plays an important role in explaining shifts in behavior among the displaced population. On the other hand, violence has no effect in the loss task, as all coefficients are quite small and insignificant. Finally, while being a victim does not induce higher levels of ambiguity aversion (Panel C, Column 1), a more intense exposure to violence (a higher degree of victimization) does induce a significant shift towards higher levels of ambiguity aversion (Panel C, Columns 2 and 3). This provides an explanation as to why massively displaced households, for whom there is not enough variation in exposure to violence, do not exhibit high levels of ambiguity aversion (Table 8).

To test if the higher levels of risk aversion among the displaced population are driven by the incidence of mental distress, I regress the choice in each task on three indicator variables that take the value of 1 if the displaced person is at risk of suffering from Anxiety, Phobic Anxiety and Hostility, respectively (Table 10). This occurs when the score from the SCL-90 for each psychopathology exceeds the clinical cutoff of 63. Recall that the findings from the psychological literature point out that anxious states and neuroticism induce higher levels of risk aversion, whereas anger brings about opposite results. I include indicator variables for each psychopathology, rather than the continuous T-score because presumably the effect of mental trauma is not linear and occurs only when the psychopathologies exceed a certain cutoff. However, the results are robust, albeit slightly less significant when the continuous score of each psychopathology is included. The regressions also control for the same set of household and individual covariates included before, but do not control for the time since the displacement episodes since on average victims recover psychologically, and thus the incidence of mental distress has an inverse collinearity with the time since displacement.

Remarkably, exceeding the clinical cutoff for Phobic Anxiety disorders induces a sizeable shift towards higher levels of risk aversion in the gains and in the ambiguity task. General anxiety, on the other hand, does not have a significant impact on risk aversion levels. A clinical incidence of Hostility, on the other hand induces a shift towards lower levels of risk aversion, especially in the ambiguity task. These results are robust when I only include variables for the incidence of Phobic Anxiety and Hostility, but not when I include Anxiety and Hostility. Recall that Phobic Anxiety refers to an abnormal fear to an everyday situation, that could be triggered by previous exposure to traumatic episodes, whereas Anxiety corresponds to a general

fear of dread and fear that can be induced by several circumstances, including victimization, but also by difficult living conditions, poverty, and inequality among others. The fact that Phobic Anxiety, and not Anxiety is driving the shift in risk attitudes provides further support for the claim that the differences in behavior between the displaced and non-displaced populations are driven by exposure to violence, and the resulting mental distress, and not by other (unconfounded) factors.

5.3. Threats to validity

The results above are causal estimates of the impact of forced displacement, violence, and mental distress on behavior under the assumption that violence is random, there is no selection into displacement, and that the group of non-displaced households provides an appropriate control group. Although I argued that the dynamics of the civil conflict made selection into violence unlikely, and that if there was endogenous selection into displacement of inherently risk averse individuals the resulting bias would lead to conservative estimates of the impact of violence on behavior, I cannot completely rule out that there is no endogenous selection at the village level. Moreover, since forced displacement entails a wide variety of experiences, and the living conditions of the displaced and non-displaced populations are considerably different at the time of the field experiments, it could as well be that the variation in victimization levels and the incidence of mental distress are capturing some of these other differences, and not violence and distress per se.

To address these concerns, I drop the sample of non-displaced households, and use the variation in the degree of victimization only among the displaced households. In doing so, I make fewer assumptions on the selection process into violence, and only compare among households that were displaced, migrated from rural to urban areas, and suffered considerable from this process. The underlying assumption here will then be that conditional on being displaced, the degree of victimization is random. But even if this is not the case, and instead if fearful and risk averse households migrated at the first sign of trouble, whereas the more risk loving resisted for a longer period of time and thus had a longer time frame to be victimized, the selection process will bias the results against the hypothesis that violence makes individuals more risk averse. In such case, the estimated impact of violence on risk attitudes will be a conservative estimate of the true impact.

Results indicate, once more, that higher levels of victimization are associated with higher levels of risk aversion in the gains and in the ambiguity domains, but not in the loss domain (Table 9, Columns 4,5, and 6). Note that the size of the coefficients is smaller than when the full sample is considered, but still sizeable and significant, suggesting that violence in fact brings about a shift in risk attitudes, and that the results are not driven by an inadequate control group or by selection into violence and into displacement. Similarly, the results for the impact of mental distress remain significant and similar in magnitude as when the full sample is considered.

To further rule out that other factors can be confounded with the victimization and mental distress variables, specifically asset losses and poverty levels, I use the variation on the size of the asset losses and on household expenditures. I run ordered probit regressions on the displaced sample only including different measures of the size of the land losses due to displacement, both on lands lost that were under control in origin sites and as well as on lands owned, and the same set of controls used before. Results indicate that variations in the size of the asset shock actually results in a shift towards lower levels of risk aversion. Higher losses (both in levels and in percentage terms) result in participants moving away from the safest lotteries, although this could have something to do with initial differences in risk aversion levels, as relatively wealthier households were presumably less risk averse under decreasing absolute risk aversion and happened to lose more as a consequence of forced displacement (Table 11).

Finally, since consumption levels are endogenous to risk attitudes, I present descriptive statistics for the non-displaced and displaced samples, as well as for quantiles of the displaced population according to their level of per-capita yearly expenses net of aid (Table 12). It can be observed, that although there is a somewhat linear relationship between levels of consumption and the incidence of anxiety, lottery choices in each task seem to track differences in consumption levels in the opposite direction, with poorer households choosing riskier lotteries.

6. Conclusions

I analyze how risk attitudes change after a shock of violence in the context of the Internally Displaced Population in Colombia. By collecting data on exposure to violence, mental trauma, and risk attitudes in an ongoing conflict scenario, I contribute to the previous literature,

and provide evidence not only on the way in which risk attitudes change after exposure to violence, but also on the psychological factors underlying these changes, and on their temporal character. Results indicate a troublesome trend of risk aversion among those individuals who were forced to migrate by violence, who were more directly exposed to violence, and who report a high incidence of emotional distress. The research design and the econometric analysis that was implemented suggest that these trends are the result of exposure to traumatic episodes of violence, which produces psychological distress and anguish.

The incidence of emotional distress, important by itself, can become an additional obstacle for the socio-economic recovery of victims of civil violence. Social and clinical psychologists have shown that the prevalence of mental trauma often has many negative consequences that go beyond the direct effects on mental health. PTSD, fear, depression, and anxiety, for instance, impair social functioning, hinder the ability to perform tasks, and could also bring about negative shifts in behavior. I show that exposure to violence and the prevalence of emotional distress and psychopathologies can make victims more risk averse. By doing so, I point out that violence can distort economic behavior and choices in a worrisome way, thus inducing further welfare costs.

An important finding of this paper is that the shifts in risk attitudes are not permanent, and that victims' attitudes seemingly return to their pre-displacement levels. Notwithstanding, several years are required for victims to recover, and at least from a theoretical perspective there are concerns that the temporal shock to attitudes can have long-lasting consequences on welfare trajectories. These behavioral changes can then become obstacles for the economic recovery of the displaced population.

The findings from this paper highlight the need to provide psychological assistance to victims of violence and civil conflict to restore mental health but also to encourage appropriate economic decisions that could foster movements out of poverty. This, at least in the context of Colombia, is critical and is disregarded in the set of policies designed to assist the displaced population. Colombia for instance, among all countries in South America, is the nation that devotes the least amount of resources, as a percentage of the national health budget, to the diagnostic and treatment of mental disorders (Doctors Without Borders, 2010). This, even when 8 percent of the Colombian population has been displaced by violence, thousands have been

kidnapped, and many more have been in one way or another exposed to other forms of violence. For instance, in the departmental capitals that were visited for this paper's fieldwork, only one psychologist is assigned to assist the hundreds of displaced individuals that each week arrive fleeing from violence, while in the smaller municipalities where the massively displaced communities were located, only sporadic psychological assistance is offered through mobile laboratories from the Colombian Institute for Household Welfare (ICBF). The negative mental health and welfare connotations of the incidence of violent-related emotional distress found in this paper should then serve to promote better mental health policy interventions for the displaced population and for other victims of the civil conflict.

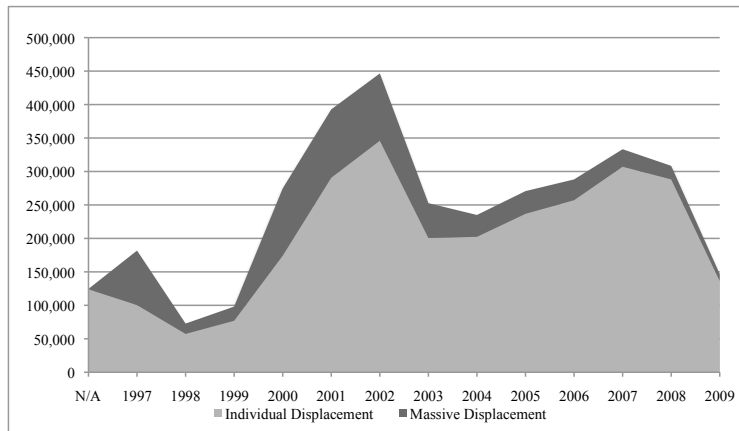
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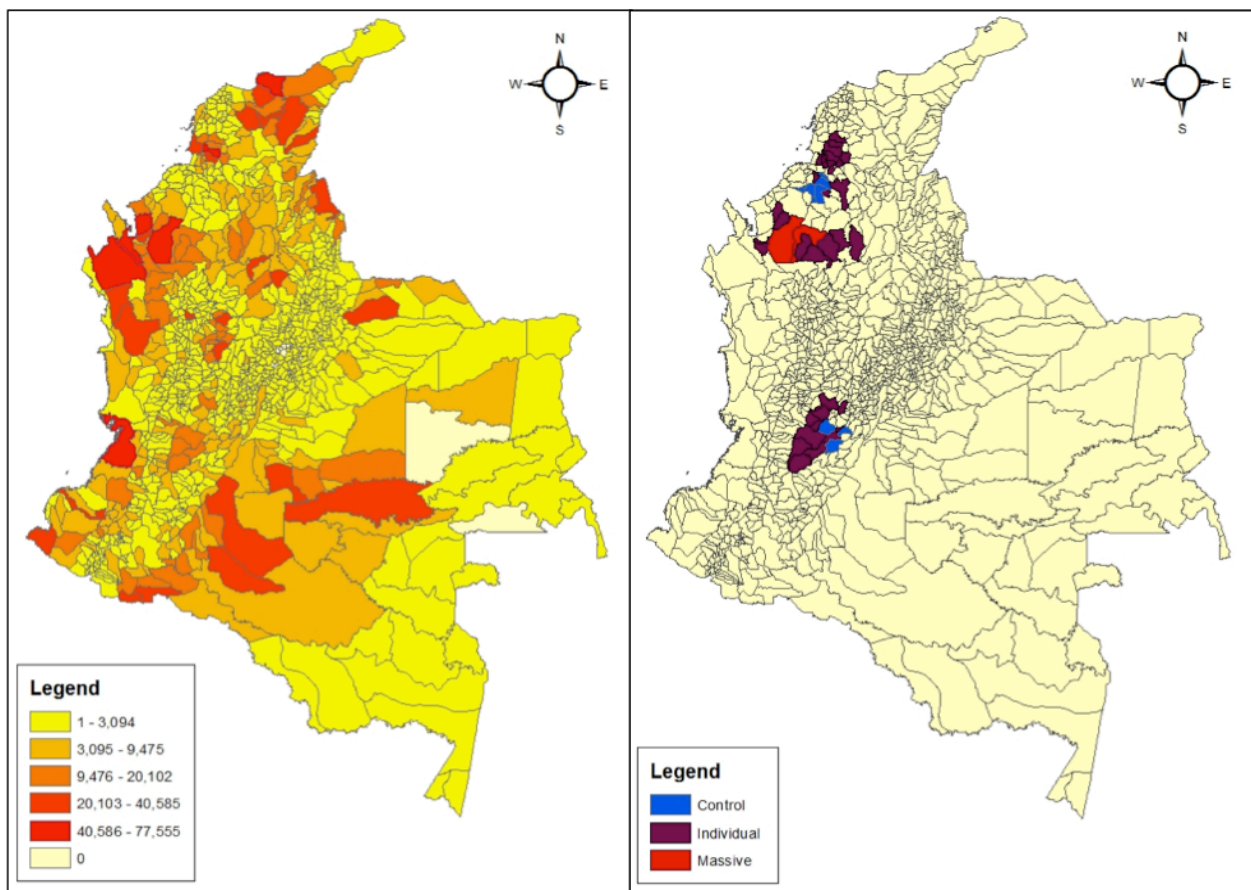
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Figure 1. Evolution of Forced Displacement in Colombia 1997 – 2010



¹ Source: Observatorio Nacional de Desplazamiento Forzado, Registro Único de Población Desplazada. Sept 2010

Figure 2. Displacement by Municipality 1997 – 2010¹ & Geographic Distribution of Municipalities Included in the Sample



¹ Source: Observatorio Nacional de Desplazamiento Forzado, Registro Único de Población Desplazada. Sept 2010

Figure 3. Emotional Distress by Group

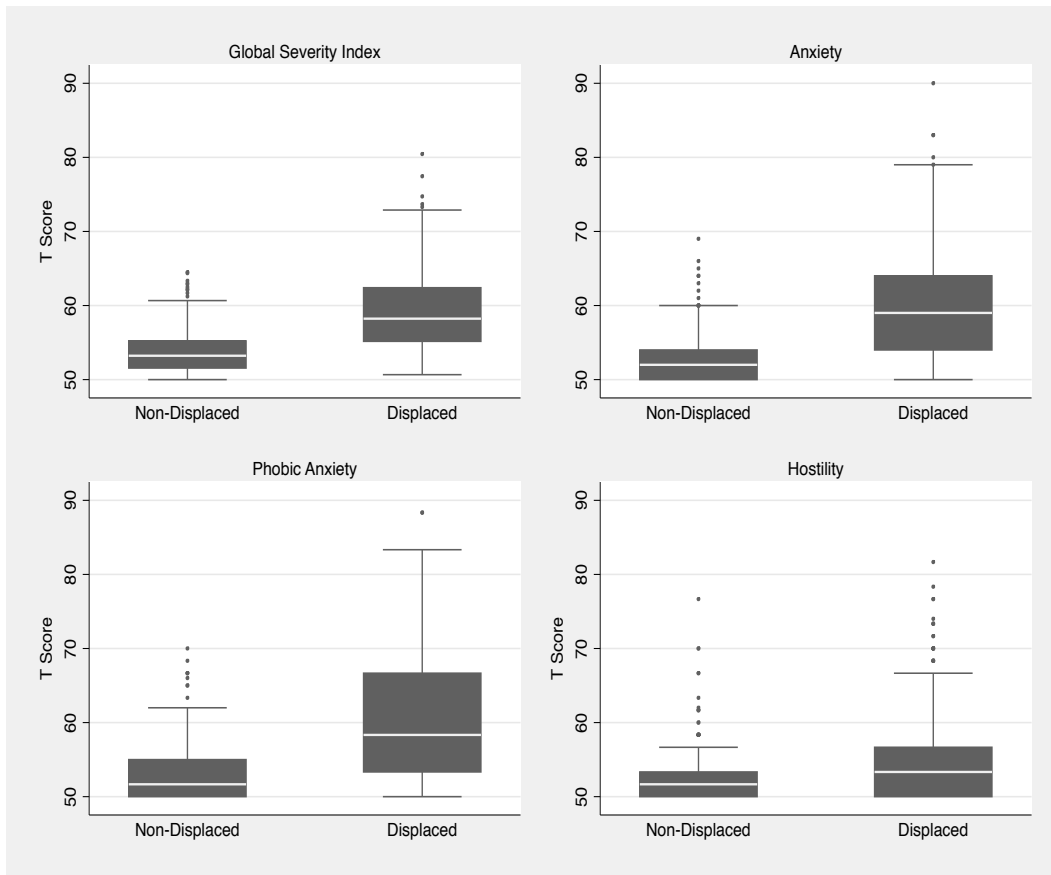


Figure 4. Risk Aversion Experiment – Gains Domain

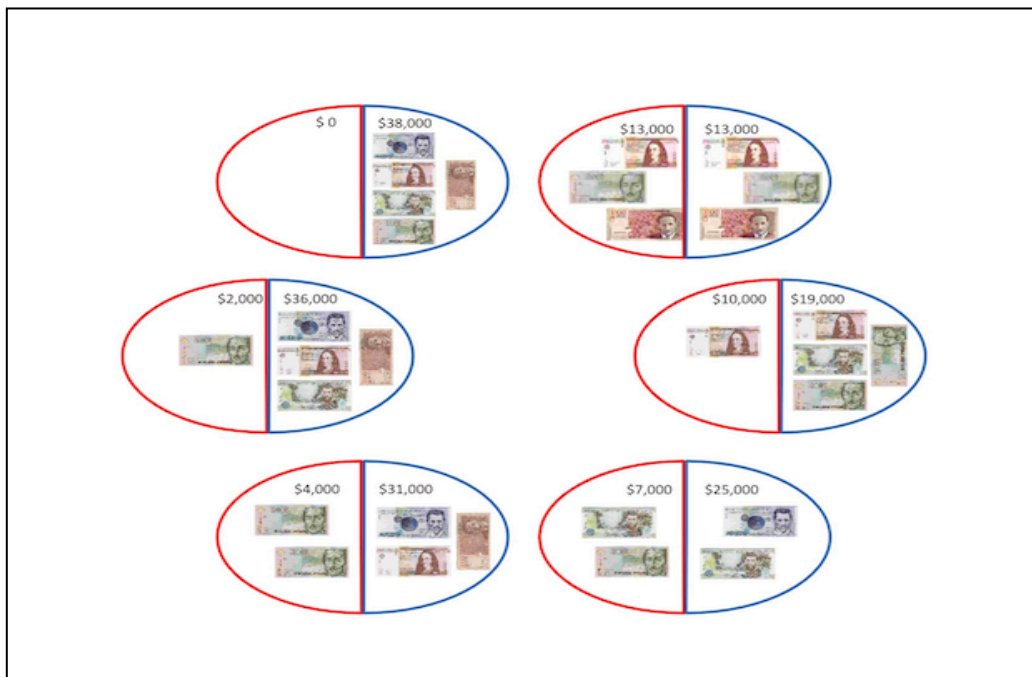


Figure 5. Lottery Choices by Group

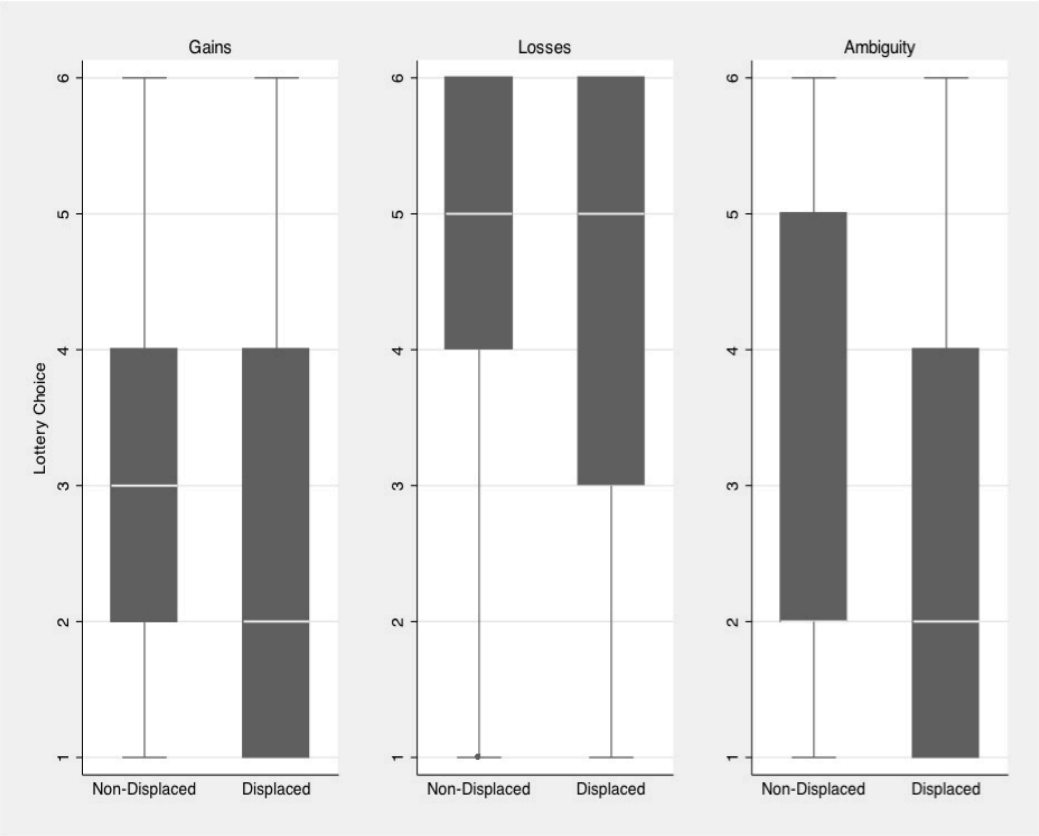


Table 1. Triggers of Displacement

	ENDH-2004 ¹	Individual	Massive	Full Sample
	[1]	[2]	[3]	[4]
A. Displacement Process				
Number of times displaced	-	1.10	1.17	1.13
		[0.341]	[0.400]	[0.371]
Time since displacement episode (years)	3.77	3.67	0.94	2.40
	[2.812]	[3.690]	[1.241]	[3.138]
Less than one year (% of IDP)	0.03	0.34	0.60	0.46
Between a year and five years (% of IDP)	0.11	0.39	0.39	0.39
Between five and ten years (% of IDP)	0.86	0.28	0.02	0.16
B. Displacement Triggers²				
# of events leading to the displacement of the household	3.12	3.56	3.47	3.52
# of events leading to the displacement of neighbors	-	3.68	3.68	3.68
Threats	0.65	0.88	0.31	0.65
Combats within the municipality	0.47	0.26	0.93	0.53
Random Violence	0.56	0.31	0.33	0.32
Order to migrate	0.41	0.33	0.24	0.29
Assassinations	0.45	0.28	0.25	0.26
Recruitment	0.22	0.29	0.07	0.20
Attacks	0.27	0.26	0.14	0.21
Massacres	0.30	0.20	0.16	0.18
Dissapearances	0.19	0.20	0.07	0.15
Extorsion	-	0.18	0.08	0.14
Kidnaps	0.12	0.14	0.05	0.10
Mines	-	0.15	0.03	0.10
Sexual Violence	-	0.11	0.02	0.07
Observations	2,648	153	132	285

¹ Universidad de los Andes, Encuesta Nacional de Hogares Desplazados (ENDH) 2004; ² The displacement triggers refer to the type of events that led to the displacement of the household, and not to the number of times each event occurred. Standard deviations in brackets

Table 2. Municipal Sample Balance – ‘Treated’ and ‘Non-Treated’ Municipalities

1993-2010 Averages	Atlantic Region Municipalities			Central Region Municipalities		National Averages ¹
	Massive IDP Sample	Individual IDP Sample	Control Sample	Individual IDP Sample	Control Sample	
A. Geographic						
Department						
Area (km)	3,314 [1437.1]	738 [644.8]	547 [287.3]	884 [600.4]	752 [231.3]	910 [2708.9]
Altitude (meters above sea level)	95 [40.64]	108 [79.47]	82 [55.09]	970 [726.6]	352 [35.51]	1,234 [1173.2]
Land quality index	2.47 [0.112]	3.18 [1.494]	4.49 [0.808]	2.65 [0.767]	2.66 [0.0780]	2.65 [1.223]
Distance to main economic centers (km)	371 [16.42]	410 [93.38]	437 [7.461]	232 [22.59]	227 [8.009]	342 [153.4]
B. Socio-economic						
Rural population (1993 - 2010)	33,864 [10598.8]	15,678 [11917.1]	31,252 [12255.9]	14,504 [6916.0]	16,790 [8079.9]	9,294 [8430.8]
Rurality index	1.07 [0.409]	1.54 [1.834]	1.10 [0.272]	3.01 [2.104]	1.98 [1.490]	3.15 [3.906]
Poverty rate	0.53 [0.126]	0.68 [0.0837]	0.66 [0.106]	0.66 [0.0939]	0.57 [0.118]	0.61 [0.0547]
Unmet Basic Needs - Rural Area (% of pop.)	79.74 [12.27]	76.24 [10.89]	73.66 [7.209]	62.54 [16.59]	62.61 [13.98]	55.42 [20.45]
Gini coefficient	0.43 [0.0293]	0.45 [0.0347]	0.46 [0.0122]	0.47 [0.0200]	0.47 [0.0132]	0.46 [0.0364]
Land Gini coefficient	0.69 [0.0176]	0.67 [0.0597]	0.72 [0.0346]	0.74 [0.0399]	0.74 [0.0448]	0.69 [0.108]
Index of land informality	0.60 [0.182]	0.19 [0.135]	0.08 [0.0129]	0.27 [0.141]	0.24 [0.0492]	0.20 [0.228]
C. Institutional						
Fiscal performance index	60.05 [5.899]	55.16 [7.104]	56.18 [8.017]	55.47 [6.577]	57.32 [6.938]	57.05 [8.044]
Agrarian bank - number of offices	1.00 [0]	1.25 [0.434]	1.00 [0]	1.00 [0]	1.00 [0]	1.20 [0.529]
Commercial banks - number of offices	2.50 [1.539]	0.83 [1.145]	2.00 [1.107]	1.78 [1.036]	2.00 [0]	1.06 [1.342]
Number of institutions	46.50 [3.591]	29.71 [21.83]	46.80 [17.79]	22.11 [14.46]	31.00 [10.86]	21.53 [18.48]
Violence in 1948 - 1953	No	No	No	Yes	Yes	-
D. Violence & Civil Conflict						
Homicide rate	38.61 [22.75]	58.47 [79.75]	18.47 [10.41]	70.24 [48.26]	41.31 [24.22]	62.06 [124.9]
Massacre rate	2.43 [1.982]	3.26 [2.721]	-	3.30 [2.636]	-	3.61 [5.410]
Violent attacks (number)	5.476 [4.460]	12.86 [21.32]	3.392 [4.703]	8.861 [10.15]	8.268 [9.985]	8.813 [20.14]
FARC (presence of)	0.77 [0.431]	0.54 [0.499]	0.07 [0.258]	0.69 [0.466]	0.75 [0.440]	0.30 [0.458]
Paramilitaries (presence of)	0.35 [0.485]	0.20 [0.398]	0.02 [0.152]	0.12 [0.323]	0.16 [0.367]	0.10 [0.304]
Criminal Bands (presence in 2010) ²	1.00	1.00	1.00	0.00	0.00	0.33
Municipalities	2	24	5	9	3	1,077

Source: Base de Datos Municipales 1993 - 2010. Universidad de los Andes, Facultad de Economía; ¹ Excluding departamental capitals; ² Indepaz (2011) "Sexto informe sobre la presencia de grupos narcoparamilitares. Primer Semestre 2011"; Standard errors in brackets

Table 3. Household Sample Balance – Pre-Displacement Characteristics

	Non Displaced	Displaced ¹	Sample Mean Difference
Age	47.67 [12.92]	41.53 [13.48]	6.14*** (5.68)
Male (=1)	0.63 [0.482]	0.66 [0.473]	-0.03 (-0.71)
Religious (=1)	0.82 [0.382]	0.85 [0.355]	-0.03 (-0.96)
Married (=1)	0.68 [0.468]	0.62 [0.487]	0.06 (1.57)
Household size	4.90 [2.231]	4.89 [2.252]	0.00 (0.02)
Literate (=1)	0.75 [0.436]	0.82 [0.387]	-0.07* (-2.14)
Years of education	5.59 [3.731]	5.55 [4.042]	0.04 (0.11)
Permanently disabled (=1)	0.03 [0.157]	0.03 [0.177]	-0.01 (-0.51)
Worked on household's own lands (=1)	0.88 [0.325]	0.81 [0.473]	0.07* (1.98)
Off-farm laborer (=1)	0.37 [0.484]	0.39 [0.488]	-0.02 (-0.41)
Occupation - Peasant (=1)	0.63 [0.484]	0.66 [0.475]	-0.03 (-0.76)
Occupation - Domestic (=1)	0.28 [0.451]	0.26 [0.441]	0.02 (0.56)
Hh member participates in at least one organization (=1)	0.39 [0.488]	0.47 [0.500]	-0.09* (-2.09)
Hh member makes decisions in at least one organization	0.37 [0.483]	0.45 [0.695]	-0.08 (-1.65)
Lands (ha)	1.93 [4.444]	8.60 [15.24]	-6.67*** (-7.45)
Lands owned (ha)	1.31 [3.459]	5.64 [13.23]	-4.33*** (-5.62)
Observations	318	285	

¹ All variables refer to household and respondents' characteristics at origin sites; for displaced households these thus correspond to characteristics before displacement.; Standard errors in brackets; t-statistics in parentheses; * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 4. Exposure to Violence by Group

	Member of the hh has suffered		Member of the hh has witnessed	
	Non Displaced	Displaced	Non Displaced	Displaced
At least one violent event	0.15	0.93	0.11	0.86
Threats	0.09	0.52	0.05	0.51
Combats	0.02	0.58	0.00	0.53
Order to Migrate	0.02	0.43	0.01	0.40
Random Violence	0.01	0.27	0.00	0.23
Assasinations	0.05	0.26	0.05	0.48
Attacks	0.02	0.16	0.02	0.21
Recruitments	0.00	0.11	0.00	0.13
Extorsion	0.02	0.11	0.01	0.11
Dissapearances	0.01	0.11	0.00	0.16
Massacres	0.00	0.10	0.00	0.20
Land Mines	0.00	0.08	0.00	0.08
Kidnappings	0.00	0.06	0.01	0.06
Sexual Violence	0.00	0.04	0.01	0.05
Observations	318	285	318	285

Table 5. Emotional Distress by Group

	T Score (Mean & S.D.)			% Exceeding Clinical Cutoff (T>63)	
	Non-Displaced	Displaced	Mean Difference	Non-Displaced	Displaced
Global Severity Index	53.72 [2.777]	59.26 [5.423]	-5.533*** (-15.94)	0.01	0.22
Somatization	55.69 [4.859]	60.98 [6.922]	-5.290*** (-10.91)	0.09	0.35
Obsession	53.95 [3.883]	59.84 [6.661]	-5.887*** (-13.36)	0.02	0.27
Sensitivity	52.30 [2.885]	56.34 [5.601]	-4.040*** (-11.25)	0.01	0.12
Depression	55.75 [4.242]	61.88 [6.139]	-6.130*** (-14.33)	0.06	0.38
Anxiety	52.79 [3.084]	60.18 [7.556]	-7.392*** (-15.95)	0.02	0.29
Hostility	52.39 [3.524]	55.29 [6.414]	-2.897*** (-6.94)	0.02	0.14
Phobic Anxiety	52.90 [3.934]	60.570 [8.644]	-7.666*** (-14.19)	0.03	0.35
Paranoid	53.00 [3.720]	58.890 [6.411]	-5.890*** (-13.91)	0.03	0.28
Psicotic	51.71 [2.256]	55.7 [5.519]	-4.007*** (-11.83)	0.00	0.09
PTSD	-	59.89 [6.411]	-	-	0.27
Population in Distress (%)	0.07	0.479	-0.406*** (-12.65)	-	-
Observations	318	285		318	285

Standard Errors in brackets; t statistics in parenthesis; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6. Risk Aversion Experiments – Payoffs and Probability Distributions

Payoffs ¹	Gains		Losses		Ambiguity ²	
	Red	Blue	Red	Blue	Red	Blue
Choice 1	13,000	13,000	-7,000	-7,000	13,000	13,000
Choice 2	10,000	19,000	-10,000	-1,000	10,000	19,000
Choice 3	7,000	25,000	-13,000	5,000	7,000	25,000
Choice 4	4,000	31,000	-16,000	11,000	4,000	31,000
Choice 5	2,000	36,000	-18,000	16,000	2,000	36,000
Choice 6	0	38,000	-20,000	18,000	0	38,000
Endowment	0		20,000		0	
# of balls	5	5	5	5	3 : 7	3 : 7

¹ All payoffs are in Colombian Pesos (COP). At the time of the experiments, the exchange rate was approximately COP\$1,700 = US\$1; ² In the Ambiguity task, a total of ten balls were included in the black bag, 3 of them were red, three were blue, and the remaining 4 were blindly chosen from a bag containing 50 red and blue balls each.

Table 7. Displacement and Risk Aversion

Ordered Probit Estimates	Gains			Losses			Ambiguity		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Displacement Status	-0.276*** [0.088]	-0.461*** [0.111]	-0.368*** [0.123]	-0.001 [0.088]	-0.206* [0.109]	-0.153 [0.115]	-0.144* [0.086]	-0.264** [0.108]	-0.293*** [0.113]
Time since Displacement (Years)		0.121*** [0.042]	0.119*** [0.044]		0.135*** [0.038]	0.117*** [0.037]		0.085** [0.039]	0.107*** [0.039]
Time since Displacement Squared (Years)		-0.007** [0.003]	-0.007** [0.003]		-0.007*** [0.002]	-0.006*** [0.002]		-0.005** [0.003]	-0.006** [0.003]
Male			-0.062 [0.091]			-0.036 [0.092]			-0.036 [0.091]
Literate			-0.214* [0.111]			0.036 [0.110]			-0.053 [0.114]
Land Size			0.002* [0.001]			0.000 [0.001]			-0.001 [0.003]
Participated in at least one social organization			0.072 [0.095]			-0.062 [0.095]			0.111 [0.092]
Economic Shock - Past 12 months			-0.019 [0.020]			-0.015 [0.019]			-0.005 [0.019]
Death of Family Member - Past 12 months			0.016 [0.078]			0.014 [0.074]			-0.042 [0.073]
Atlantic region			-0.124 [0.090]			0.019 [0.094]			-0.047 [0.093]
Earnings in previous (practice) round			0.019*** [0.005]			0.016*** [0.003]			0.026*** [0.005]
Sample		Full	Full	Full	Full	Full	Full	Full	Full
Observations		603	603	600	603	603	600	603	600

Robust standard errors in brackets; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 8. Displacement and Risk Aversion – Massively Displaced and Atlantic Controls

Ordered Probit Estimates	Gains [1]	Losses [2]	Ambiguity [3]
Displacement Status	-0.406**	-0.072	-0.061
	[0.190]	[0.183]	[0.190]
Time since Displacement (Years)	0.13	0.10	0.03
	[0.108]	[0.091]	[0.186]
Male	-0.058	-0.173	-0.05
	[0.126]	[0.131]	[0.128]
Literate	-0.452***	0.101	-0.065
	[0.152]	[0.149]	[0.144]
Land Size	0.006	-0.008	0.003
	[0.005]	[0.006]	[0.006]
Participated in at least one social organization	0.121	-0.015	-0.196
	[0.150]	[0.147]	[0.137]
Economic Shock - Past 12 months	0.013	0.008	0.024
	[0.051]	[0.044]	[0.025]
Death of Family Member - Past 12 months	-0.085	0.157	0.062
	[0.150]	[0.145]	[0.150]
Earnings in previous (practice) round	0.018**	0.015***	0.028***
	[0.007]	[0.005]	[0.007]
Observations	296	296	296

Robust standard errors in brackets; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 9. Violence and Risk Aversion

Ordered Probit Estimates ¹	Full Sample			IDP Sample	
	Victim (=1)	# of Violent Events	Victimization Score	# of Violent Events	Victimization Score
	[1]	[2]	[3]	[4]	[5]
A. Gains Task					
Violence	-0.207** [0.103]	-0.112** [0.045]	-0.070 [0.045]	-0.089** [0.045]	-0.067 [0.041]
Time since displacement - Years	0.070* [0.038]	0.051 [0.036]	0.045 [0.036]	0.101** [0.044]	0.105** [0.044]
Time since displacement squared - Years	-0.005* [0.003]	-0.004 [0.003]	-0.003 [0.003]	-0.007** [0.003]	-0.007** [0.003]
B. Losses Task					
Violence	-0.088 [0.097]	-0.010 [0.048]	0.009 [0.051]	0.031 [0.054]	0.026 [0.056]
Time since displacement - Years	0.099*** [0.032]	0.089*** [0.030]	0.087*** [0.030]	0.111*** [0.037]	0.109*** [0.037]
Time since displacement squared - Years	-0.005*** [0.002]	-0.005*** [0.002]	-0.005*** [0.002]	-0.006*** [0.002]	-0.006*** [0.002]
C. Ambiguity Task					
Violence	-0.105 [0.099]	-0.202*** [0.055]	-0.230*** [0.088]	-0.167*** [0.057]	-0.176*** [0.065]
Time since displacement - Years	0.062 [0.038]	0.070* [0.036]	0.069* [0.037]	0.109*** [0.041]	0.116*** [0.041]
Time since displacement squared - Years	-0.003 [0.003]	-0.004 [0.003]	-0.004 [0.003]	-0.006** [0.003]	-0.007** [0.003]
Sample	Full	Full	Full	IDP	IDP
Household and region controls	Yes	Yes	Yes	Yes	Yes
Observations	596	596	596	280	280

¹ The measure of violence used as the dependent variable is listed for each specification is listed at the top of each column. Thus, the coefficients for violence refer to variable indicated in each column. Robust standard errors in brackets; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 10. Emotional Distress and Risk Aversion

Ordered Probit Estimates	Full Sample			IDP Sample		
	Gains	Losses	Ambiguity	Gains	Losses	Ambiguity
	[1]	[2]	[3]	[4]	[5]	[6]
Anxiety	0.027 [0.180]	-0.086 [0.179]	-0.025 [0.180]	0.063 [0.193]	-0.125 [0.194]	0.167 [0.200]
Hostility	0.211 [0.174]	0.224 [0.210]	0.353* [0.195]	0.302 [0.195]	0.262 [0.227]	0.469** [0.221]
Phobic Anxiety	-0.409** [0.163]	-0.056 [0.157]	-0.303** [0.148]	-0.338* [0.183]	-0.030 [0.176]	-0.427** [0.174]
Sample	Full	Full	Full	IDP	IDP	IDP
Time controls	No	No	No	No	No	No
Hh and regional controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	597	597	597	281	281	281

All stress variables are entered as dummy variables indicating if the individual is at risk of suffering mental distress for each dimension ($T_i > 63 = 1$); Robust standard errors in brackets; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 11. Asset Losses and Risk Aversion – Gains Task

Ordered probit estimates	Total Land ln(ha)	% Total land lost	Owned Land ln(ha)	% Owned land lost
Estimated coefficient	0.043*	0.226	0.045*	0.270*
	[0.022]	[0.143]	[0.027]	[0.143]
IDP sample	Yes	Yes	Yes	Yes
Hh,region, and time since displacement controls	Yes	Yes	Yes	Yes
Observations	280	280	280	280

Robust standard errors in brackets. Coefficients reported are for the correlation between the variable in each column and behavior during the experiments in the gains task; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 12. Victimization, Asset Losses, Stress and Choices by Consumption Quantiles

	Non IDP	IDP	Per capita consumption net of aid			
			Q1	Q2	Q3	Q4
Victimization Score	-0.23	0.17	0.16	-0.03	0.21	0.19
	[0.107]	[0.705]	[0.525]	[0.265]	[0.752]	[0.737]
Per capita yearly expenses - Net of aid (\$US)	828.4	835.6	178	540	867	1,757
	[591.1]	[685.4]	[260.9]	[90.03]	[123.0]	[646.3]
Monthly food consumption - Self reported (\$US)	25.22	28.17	15.74	24.34	25.03	48.55
	[17.18]	[32.09]	[11.58]	[20.86]	[13.45]	[53.77]
Land owned in origin sites (ha)	1.31	5.19	3.17	8.26	4.47	4.20
	[3.459]	[11.67]	[7.511]	[16.70]	[9.216]	[10.72]
Land owned lost during displacement (ha)	-	3.58	2.79	7.14	2.84	3.33
		[10.35]	[7.290]	[16.61]	[7.778]	[9.021]
Anxiety - Population at risk	0.02	0.29	0.32	0.32	0.19	0.25
	[0.125]	[0.456]	[0.471]	[0.471]	[0.395]	[0.439]
Phobic Anxiety - Population at Risk	0.03	0.36	0.39	0.32	0.24	0.37
	[0.167]	[0.480]	[0.492]	[0.471]	[0.432]	[0.488]
Hostility - Population at Risk	0.02	0.15	0.20	0.17	0.09	0.08
	[0.137]	[0.358]	[0.406]	[0.378]	[0.283]	[0.281]
Choice - Gains task	2.83	2.46	2.46	2.85	2.42	2.17
	[1.521]	[1.546]	[1.454]	[1.730]	[1.522]	[1.499]
Choice - Losses task	4.44	4.40	4.46	4.46	4.58	4.42
	[1.642]	[1.725]	[1.715]	[1.590]	[1.653]	[1.773]
Choice - Ambiguity task	2.88	2.68	2.85	2.76	2.70	2.39
	[1.724]	[1.587]	[1.750]	[1.568]	[1.511]	[1.377]
Observations	318	268	59	59	59	59